# New Degree Program Proposal

**Program Title:** **BS Agricultural and Food Systems**

**Degree (level):** Bachelor **of (type)**: Science

**In (major or field):** Agricultural and Food Systems

**Degree Granting Unit:** College of Agricultural, Human, and Natural Resource Sciences

**New Program or Other:**

☐ New Program ☐ Reconfiguring Courses ☒ Other: Consolidating Existing Degrees

**CIP Code**: 01.00 (No CIP Code for this title -- confirmed code with Registrar)

**Starting Date:** Upon Approval

**Projected Enrollment in 2006-07:** 104 FTE **In 2010-11:** 140 FTE

**Proposed New Funding:** None **Funding Source:** State FTE

**Method(s) of course delivery:**

☒ Classroom
- ● Pullman
- ❍ Vancouver
- ❍ Tri-Cities
- ❍ Spokane
- ❍ WSU Learning Centers

☐ WHETS or Video-conferencing System
- ☐ On-line
- ☐ Videotape
- ☐ Flexible Enrollment (with e-mail)
- ☐ Other (please describe) _____

**Scheduling:** Day Classes **Options:** Full-time and Part-time

**Total Credits Required:** 120 – 126 semester credits

**Departmental Contact:**

Name: Raymond J. Folwell Title: Assoc. Dean / Director of Academic Programs
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**Endorsement by Chief Academic Officer** (See Appendix II)

## Section I. Mission Statement

### Washington State University

**Vision**
Washington State University offers a premier undergraduate experience, conducts and stimulates world-class graduate education, research, scholarship and art, and provides an exemplary working and learning environment that fosters engagement.

**Mission**
As a public, land grant and research institution of distinction, Washington State University enhances the intellectual, creative, and practical abilities of the individuals, institutions and communities that we serve by fostering learning and inquiry in all their forms.

**A) Mission statement of the College:**

Recognizing its unique land-grant research and education mission to the people of Washington and the state's increasing global involvement, the College provides leadership in discovering, accessing, and disseminating knowledge through high quality research, instruction, and extension programs that contribute to a safe, abundant food and fiber supply; promotes the well-being of individuals, families, and communities; enhancing sustainability of agricultural and economic systems; and promoting stewardship of natural resources and ecological systems. It is the goal of CAHNRS to provide quality educational and leadership experiences to prepare WSU students to enter career fields that will meet the needs of the job market of the 21st century.

The degree fits well within the broad WSU Land Grant University context, which offers several technology, science- and engineering-based degrees. These programs include the Departments of Crop and Soil Sciences, Horticulture, Agricultural, Education and Communications, Food Science and Human Nutrition, and Biological Systems Engineering (College of Agricultural, Human, and Natural Resource Sciences) and Program in Environmental Sciences and Regional Planning (which crosses colleges). Aspects of all of these programs are integrated in the proposed degree. It complements the systems approach and is focused on the major WSU mission. The proposed degree offers the opportunity to broaden the perspective of science and systems-oriented students to include agronomic decision-making, environmental concerns, health, and public policy formation. Some of the coursework will be available to the broader campus as stand-alone courses having few or no prerequisites; the Agricultural and Food Systems degree will also offer opportunities to minor in several of the major areas.

**B) How this proposed program will complement or reflect these missions.**

Faculty and staff in CAHNRS value and have commitment to excellence; integrity; intellectual leadership and openness to ideas; a spirit of cooperation and collaboration with partners; diversity and creation of a positive workplace environment; personal and professional growth; a focus on the future, anticipating the needs of constituents, both traditional and new; being relevant and credible to the people we serve; and accountability for our performance.

The faculty wishes to deliver superior undergraduate teaching and learning programs in agriculture, natural resources, and human sciences locally, statewide, and globally.

The proposed degree, with its major options, will be a move forward in the academic program offerings and delivery of undergraduate programs in CAHNRS. This is the first step CAHNRS is undergoing in significant curriculum changes to move its programs ahead. The Bachelor of Science degrees in Entomology, Integrated Cropping Systems, and Biological Systems Engineering have been dropped. If the proposed degree in Agricultural and Food Systems is approved, the Bachelor of Science degrees in General Agriculture and Agricultural Technology Management will be dropped, as well. We are also reassigning faculty tenure homes and staff positions to more efficiently support and administer the proposed Agricultural and Food Systems degree. The proposed degree will provide a more relevant educational and leadership experience to meet the evolving needs of students, agriculture, and society. As we prepare the next generations of leaders in agriculture and natural resources, programs must be developed to meet a broader audience of potential students. The "Agricultural and Food Systems" program is designed to meet this state, national, and global need.

The proposed changes are also consistent with the WSU Strategic Plan Goals and CAHNRS Academic Program strategic directions:

- offer the best undergraduate experience in a research university,
- improve coordination of courses across departments and colleges,
- continue to improve the quality of our program offering and its diversity.

## Section II. Program Description

Agricultural and Food Systems have been described as "a specified group of components, operational functions, and processes that are integrated to accomplish a well-defined purpose; and, a complex system which can include systems within a system." This approach integrates the human, economic, chemical, biological, ecological, and educational components to accomplish the defined goal. It's interdisciplinary in nature.

Because of the diversity of this program, it must be more than a collection of courses. It is a series of coordinated, integrated experiences that foster critical thinking and communication skills, develop industry specific knowledge, and cultivate diversity of thought. The proposed degree is interdisciplinary and therefore does not fall within a single discipline. The objective of having students learn a systems approach to a given area (major/option) will afford the students the opportunity to develop the tools, abilities, and understanding of how various factors influence the performance of an integrated system.

This proposed degree program is interdisciplinary in nature and the academic components within existing CAHNRS departments/units will contribute to the program delivery. See Outline below:

Major: Agricultural Business and Technology Systems
Options: Agri-Food Production Management
Agri-Food Business Management
Communications (Journalism/Public Relations/Advertising)
Technology

Major: Agricultural Education

Major: Organic Agriculture Systems

Major: Pest Management Systems

Major: Plant and Soil Systems
Options: Cropping Systems
Soil Management
Horticulture Systems

## Section III. State Need and Student Demand for the Program

A needs assessment was conducted by the Social and Economic Sciences Research Center at Washington State University. A sample of 589 alumni, employers, faculty contacts, and teachers were contacted via e-mail or mail concerning the survey. The completion rate was 39.45% overall. The survey results indicated that the structure of the proposed degree program with its requirements were of a high priority to the respondents. The abilities to think critically and analyze situations and implement an acceptable course of action are the core of a proposed Agricultural and Food Systems degree. To communicate effectively and develop interpersonal skills to succeed as an individual or team member, are paramount to the success of its graduates. All of these abilities, coupled with the skill to integrate principles from basic sciences (agriculture) into decision making processes for the agricultural and food industries, were all considered high priority areas in such an educational experience.

The Agricultural and Food Systems program must be a partnership with industry, public service, and education. Industry tells us that real world application/knowledge of the systems view is a critical need for today's graduates.

These graduates must be able to meet the challenges of environmental, legal, ethical, economic, educational, and managerial issues facing the 21$^{st}$ century. Traits for the graduates must include: strong communication/ people skills; technical expertise; critical thinking; and be goal oriented and have the ability to continue learning. They must also have a strong academic background in the scientific and social issues in the field; understand and use the technologies available; and demonstrate the ability to make informed decisions.

## Section IV. Goals, Objectives, and Student Learning Outcomes

### A. Goals and Objectives

This program will prepare students for successful agricultural and agriculturally related careers and a lifetime of informed choices in the global agriculture, food, fiber, and natural resources systems.
The Agricultural and Food Systems degree is designed to provide students with the ability to: 1) understand integrated agricultural systems concepts; 2) integrate and analyze systems approaches; 3) communicate in both written and oral formats; and 4) develop expertise in agricultural and agricultural systems policies and practices. The degree allows the student to choose areas of concentration to better meet their needs today and in the future.

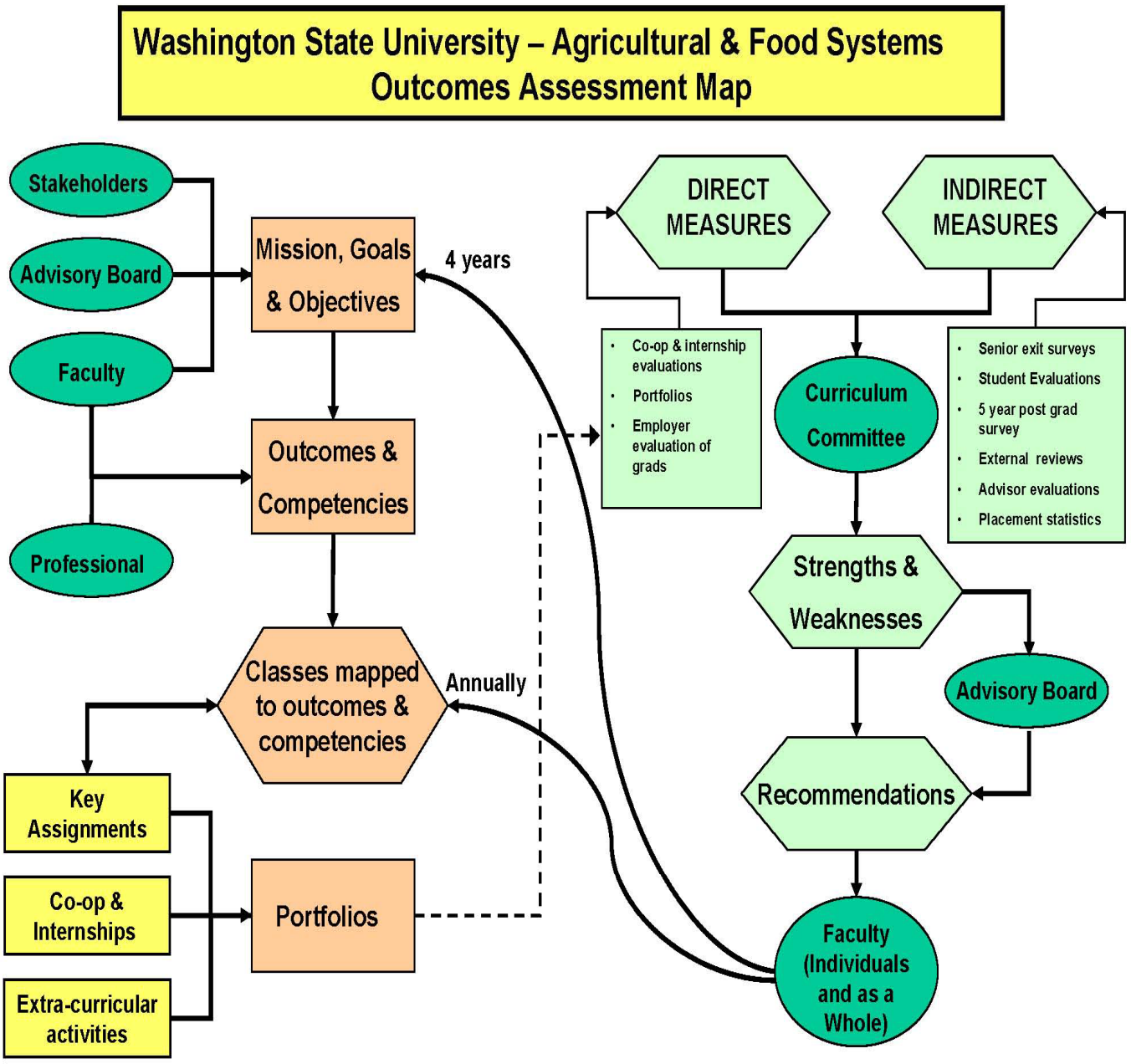
The major objective of the assessment will be to determine if the program objectives are being achieved. The assessment plan will consist of several components at various stages in the program.

At the entry level, academic records, including high school GPA's and SAT scores, will provide a basis for comparing students entering the proposed degree program in agricultural and food systems with students entering other programs at Washington State University and other majors offered by the College of Agricultural, Human, and Natural Resource Sciences.

Retention and graduation rates of students entering the program will be compiled. This information along with employment placement records of graduates of the program will be used to provide partial assessment. An annual survey of program alumni and employers will be undertaken to measure specific dimensions of competency, satisfaction, effectiveness, communication and problem-solving skills, leadership qualities and overall achievements of graduates. The initial survey period is proposed for one year after the first class graduates (approximately three years after program initiation.)

A program review will be organized by the faculty as an on-going part of the College of Agricultural, Human, and Natural Resource Sciences review scheduled every five years. The initial review will be undertaken after four years to assess progress toward achievement of program objectives. The review outcomes will help redirect dimensions of the course of study identified as inadequate or in need of adaptation. The review will use the data base generated under the various categories of assessment noted above as well as develop new information needed for a more comprehensive evaluation. The review process will assist the Agricultural and Food Systems program in making progress toward the required program objectives.

A diagram is attached which demonstrates the overall approach that will be pursued in assessing the student learning outcomes and how courses and curriculum will be modified to improve the overall educational experience of the student.




**B. Student Learning Outcomes and Assessment**

The Agricultural and Food Systems Student Outcomes are:

1. Describe the scientific and interdisciplinary nature of agricultural and natural systems (food, crops, animals, technology).
2. Develop knowledge of agribusiness analysis and management skills.
3. Develop critical thinking and problem solving skills.
4. Demonstrate communication/leadership/interpersonal skills.
5. Develop an awareness of cultural, political, ethical, and human issues.
6. Develop technical skills and abilities within Agricultural and Food Systems including crops, animals, food, and technology.
7. Describe the domestic and international aspects of Agricultural and Food Systems in relation to government policies.

To achieve the above set of common goals, it is concluded that the curriculum must provide:

1. A scientific foundation (biological, physical, and mathematical);
2. Strong leadership, ethical, and communication skills; and
3. Critical thinking and problem-solving skills

Students will gain the skills and competencies through the core curriculum that will use various pedagogical approaches including case studies, presentations, seminars, field trips, and lecture/laboratory formats.

Students in the Agricultural and Food Systems program will be evaluated on a continuing basis of performance in formal courses. Students will be encouraged to become involved with internships and study abroad programs. Employers that provide these internships will be contacted and or visited on an annual basis to obtain their evaluations of the students and program expectations.

End-of-program student assessment will consist of the overall GPA's of the graduates, end of program survey, their performances in core courses, success in job placement, and entry salary levels. Employers will be surveyed regarding their overall satisfaction with the program's graduates. Suggestions about degree requirements or curriculum changes will be sought from employers, stakeholders, and various related groups.

## Section V. Curriculum

The draft proposed schedule of studies is listed below. Courses listed are all currently taught at WSU, with the exception of the proposed AFS 101, 201, 301, 401 courses. Information on these courses is also outlined below.

**Degree: B.S. In Agriculture and Food Systems**
**Major: Agricultural Business and Technology Systems**
**Options: Agri-Food Business Management**
**Agri-Food Production Management**
**Technology**
**Communications (Journalism/Public Relations/Advertising)**

| **General Requirements** | | **Ag & Food Systems Core Requirements** | |
|---|---|---|---|
| ComSt 102[C] or HD 205 [C] | 3 | AFS 101** | 3 |
| World Civ [A] | 6 | CropS/Hort 102 | 3 |
| Com [W] (Engl 101) | 3 | AS 101 | 3 |
| Intercultural [I] CropS 360 | 3 | AFS 201** | 3 |
| Arts & Hum [H] & [D] | 3 | Econ 101 [S] | 3 |
| Soc Sci (in AFS Core) [S]* | 0 | SoilS 201 [B] | 3 |
| H, G. S, K (Psych 105) | 3 | Stats 212 [N] or Math 140, 171, 202 | 4 |
| Stat 212 (in AFS Core) [N]* | 0 | Biol 372[M] or NATRS 300 [B] | 4-3 |
| Biological Science [B] | 8 | AFS 301** | 3 |
| Physical Science [P] | 8 | CRS 336[S] | 3 |
| Chem 101/102 or 105/106 | | Seminar (discipline optional) | 1 |
| Diversity (integrated) [D] | | Capstone (Tier III) [T] | 3 |
| Math 107or 201*** | 3-4 | AFS 401** | 3 |
| **Total General Req.** | **43-44** | **Total AFS Core** | **35-36** |

**Option 1 - Agri-Food Business Management**

| | | | |
|---|---|---|---|
| Fin 325 | 3 | | |
| Acctg 231 | 3 | | |
| AgEc 340 | 3 | | |
| AgEc 350 | 3 | | |
| AgEc 360 | 3 | | |
| AgEc 3XX (elective) | 3 | | |
| AgEc 4XX (elective) | 3 | | |
| Acctg 230 | 3 | | |
| Engl 402 [W, M] | 3 | | |
| Electives | 15 | | |
| **Total Agri-Food Business** | **42** | **Total Credits** | **120-122** |

**Option 2 - Agri-Food Production Management**

| | | | |
|---|---|---|---|
| NATRS 312 [S], [D] | 3 | | |
| AgTM 305 | 3 | | |
| AgTM 315 | 3 | | |
| AgTM 436/437 | 4 | | |
| AgEc 320[S,M] | 3 | | |
| CropS/Hort 202 | 3 | | |
| Hort/CropS 3XX | 3 | | |
| Electives | 20 | | |
| **Total Agri-Food Production** | **42** | | **Total Credits 120-122** |

**Option 3 – Technology**

| | | | |
|---|---|---|---|
| AgTM 305 | 3 | | |
| AgTM 314 | 3 | | |
| AgTM 315 | 3 | | |
| AgTM 330 | 3 | | |
| AgTM 405 | 2 | | |
| AgTM 412 | 3 | | |
| AgTM 416 | 3 | | |
| AgTM 451 | 0 | (Seminar in AFS Core) | |
| MgtOP 301 | 3 | | |
| Acctg 230 | 3 | | |
| Mktg 360 | 3 | | |
| Ag Ec 440 [M] | 3 | | |
| Engl 402 [M, W] | 3 | | |
| Electives | 9 | | |
| **Total Technology** | **44** | | **Total Credits 122-124** |

**Option 4 - Communications - Journalism**

| | | | |
|---|---|---|---|
| Com 245 | 3 | | |
| Com 295 | 3 | | |
| Com 409 | 3 | | |
| Com 415 | 3 | | |
| Com 440 | 3 | | |
| Com 460 | 3 | | |
| Jour 305 [M] | 3 | | |
| Jour 330 | 3 | | |
| Jour 425 [M] | 3 | | |
| Journalism Option Elective | 3 | | |
| Engl 201 [W] | 3 | | |
| Electives | 9 | | |
| **Total Comm Journalism** | **42** | | **Total Credits 120-122** |

**Option 5 - Communications - Public Relations**

| | | | |
|---|---|---|---|
| Com 245 | 3 | | |
| Com 295 | 3 | | |
| Com 409 | 3 | | |
| ComST 235 [C] | 3 | | |
| ComST 324 [C] [M] | 3 | | |
| ComSt 335 | 3 | | |

| | | | |
|---|---|---|---|
| Engl 201 [W] | 3 | | |
| Jour 305 [M] | 3 | | |
| PR 312 | 3 | | |
| PR 313[M] | 3 | | |
| PR 412 | 3 | | |
| AgEc 350 | 3 | | |
| Electives | 6 | | |
| **Total Com PR Req.** | **42** | **Total Credits 120-122** | |

**Option 6 - Communications - Advertising**

| | | | |
|---|---|---|---|
| Com 245 | 3 | | |
| Com 295 | 3 | | |
| Com 409 | 3 | | |
| Adv 380 | 3 | | |
| Adv 381 [M] | 3 | | |
| Adv 382 | 3 | | |
| Adv 480 | 3 | | |
| ComST 324 [C] [M] | 3 | | |
| ComST 335 | 3 | | |
| AgEc 350 | 3 | | |
| Engl 201 [W] | 3 | | |
| Electives (must include ComST 235 or PR 312) | 9 | | |
| **Total Com Adv. Req.** | **42** | **Total Credits 120-122** | |

**Degree:** **B.S. In Agriculture and Food Systems**
**Major:** **Agricultural Education**
**Options:** **None**

| **General Requirements** | | **Ag & Food Systems Core Requirements** | |
|---|---|---|---|
| ComSt 102[C] or HD 205 [C] | 3 | AFS 101** | 3 |
| World Civ [A] | 6 | CropS/Hort 102 | 3 |
| Com [W] (Engl 101) | 3 | AS 101 | 3 |
| Intercultural [I] CropS 360 | 3 | AFS 201** | 3 |
| Arts & Hum [H] & [D] | 3 | Econ 101 [S] | 3 |
| Soc Sci (in AFS Core) [S]* | 0 | SoilS 201 [B] | 3 |
| H, G. S, K (Psych 105) | 3 | Stats 212 [N] | 4 |
| Stat 212 (in AFS Core) [N]* | 0 | Biol 372 [M] or NATRS 300 [B] | 4-3 |
| Biological Science [B] | 8 | AFS 301** | 3 |
| Physical Science [P] | 8 | CRS 336 [S] | 3 |
| Chem 101/102 or 105/106 | | Seminar (incl. In AgEd 407 below) | 0 |
| Diversity (integrated) [D] | | AFS 401** | 3 |
| Capstone (Tier III) [T] | 3 | | |
| Math 107or 201*** | 3-4 | | |
| **Total General Req.** | **43-44** | **Total AFS Core** | **34-35** |

**Ag Education Core Req.**

| | |
|---|---|
| AgEd 342 | 3 |

| | |
|---|---|
| AgEd 407 | 6 |
| AgEd 440 [M] | 2-3 |
| AgEd 442 | 2 |
| AgEd 471 | 2 |
| T&L 300 | 1 |
| T&L 301 | 2 |
| T&L 302 | 2 |
| T&L 303 | 2 |
| T&L 317 | 2 |
| T&L 328 [M] | 2 |
| T&L 400 | 2 |
| EdPsych 402 | 2 |
| T&L 404 | 2 |
| T&L 415 | 6 |
| T&L 445 | 2 |
| T&L 478 | 2 |
| AgTM 201 | 3 |
| AgTM 402 | 3 |
| Engl 201[W] or 301[W] | 3 |
| Electives-Upper Div | 3 |
| Electives-AgEc 340 or 350 | 3 |
| **Total Education Req.** | **57-58 Total Credits 134-137** |

**Degree:** **B.S. In Agriculture and Food Systems**
**Major:** **Organic Agriculture Systems**
**Options:** **None**

| **General Requirements** | |
|---|---|
| ComSt 102[C] or HD 205 [C] | 3 |
| World Civ [A] | 6 |
| Com [W] (Engl 101) | 3 |
| Intercultural [I] CropS 360 | 3 |
| Arts & Hum [H] Phil 260 | 3 |
| Soc Sci (in AFS Core) [S]* | 0 |
| H, G. S, K (Psych 105) | 3 |
| Stat 212 (in AFS Core) [N]* | 0 |
| Biological Science [B] | 8 |
| Biol106 & 107 or Biol 120 | |
| Physical Science [P] | 8 |
| Chem 101/102 or 105/106 | |
| Diversity (integrated) [D] | |
| Capstone (Tier III) [T] | 3 |
| Math 107 or 201*** | 3-4 |
| **Total General Req.** | **43-44** |

| **Ag & Food Systems Core Requirements** | |
|---|---|
| AFS 101** | 3 |
| CropS/Hort 102 | 3 |
| AS 101 | 3 |
| AFS 201** | 3 |
| Econ 101[S] | 3 |
| SoilS 201 [B] | 3 |
| Stat 212 [N] or Math 140, 171, 202 | 4 |
| Biol 372[M] or NATRS 300 [B] | 4-3 |
| AFS 301** | 3 |
| CRS 336 [S] | 3 |
| Seminar (discipline optional) | 1 |
| AFS 401** | 3 |
| **Total AFS Core** | **35-36** |

| **Organic Agriculture Systems Core** | |
|---|---|
| SoilS 101 | 3 |
| SoilS 404 or 345 or 445 | 3 |

| | | | |
|---|---|---|---|
| SoilS 480 | 6 | | |
| FSHN 130 [B] | 3 | | |
| CropS 305 or Entom 340 or PlP 429 | 3 | | |
| Internship (discipline optional) | 3 | | |
| Ag Electives | 21 | | |
| (Must include [M] course(s) if not fulfilled above) | | | |
| **Total Plant & Soil Core Req.** | **42** | **Total Credits** | **120-122** |

**Degree:** **B.S. In Agriculture and Food Systems**
**Major:** **Pest Management Systems**
**Options:** **None**

| **General Requirements** | | **Ag & Food Systems Core Requirements** | |
|---|---|---|---|
| ComSt 102[C] or HD 205 [C] | 3 | AFS 101** | 3 |
| World Civ [A] | 6 | CropS/Hort 102 | 3 |
| Com [W] (Engl 101) | 3 | AS 101 | 3 |
| Intercultural [I] CropS 360 | 3 | AFS 201** | 3 |
| Arts & Hum [H] & [D] | 3 | Econ 101[S] | 3 |
| Soc Sci (in AFS Core) [S]* | 0 | SoilS 201 [B] | 3 |
| H, G. S, K (Psych 105) | 3 | Stat 212 [N] | 4 |
| Stat 212 (in AFS Core) [N]* | 0 | Biol 372 [M] or NATRS 300 [B] | 4-3 |
| Biological Science [B] | 8 | AFS 301** | 3 |
| Physical Science [P] | 8 | CRS 336 [S] | 3 |
| Chem 101/102 or 105/106 | | Seminar (discipline optional) | 1 |
| Diversity (integrated) [D | | AFS 401** | 3 |
| Capstone (Tier III) [T] | 3 | | |
| Math 107 or 201*** | 4-3 | | |
| **Total General Req.** | **43-44** | **Total AFS Core** | **35-36** |

| **Pest Management Systems Core** | | | |
|---|---|---|---|
| Biol 320 | 4 | | |
| Biol 332 | 4 | | |
| CropS 305 | 3 | | |
| Entom 340 or 343 [M], 344[M] | 3-5 | | |
| ES/RP 174 | 3 | | |
| IPM 201 | 2 | | |
| IPM 399 | 3 | | |
| IPM 452 | 2 | | |
| IPM 462[M] | 3 | | |
| PlP 429 | 3 | | |
| Electives | 12 | | |
| (Must include [M] course(s) if not fulfilled above) | | | |
| **Total Pest Mgt** | **42-44** | **Total Credits** | **120-124** |

**Degree:** **B.S. In Agriculture and Food Systems**
**Major:** **Plant and Soil Systems**
**Options:** **Cropping Systems**
**Soils Management**
**Horticulture Systems**

| **General Requirements** | |
|---|---|
| ComSt 102[C] or HD 205 [C] | 3 |
| World Civ [A] | 6 |
| Com [W] (Engl 101) | 3 |
| Intercultural [I] CropS 360 | 3 |
| Arts & Hum [H] Phil 260 | 3 |
| Soc Sci (in AFS Core) [S]* | 0 |
| H, G. S, K (Psych 105) | 3 |
| Stat 212 (in AFS Core) [N]* | 0 |
| Biological Science [B] | 8 |
| Biol 106; 107 or Biol 120 | |
| Physical Science [P] | 8 |
| Chem 101/102 or 105/106 | |
| Diversity (integrated) [D] | |
| Capstone (Tier III) [T] | 3 |
| Math 107 or 201*** | 3-4 |
| **Total General Req.** | **43-44** |

| **Ag & Food Systems Core Requirements** | |
|---|---|
| AFS 101** | 3 |
| CropS/Hort 102 | 3 |
| AS 101 | 3 |
| AFS 201** | 3 |
| Econ 101[S] | 3 |
| SoilS 201 [B] | 3 |
| Stat 212 [N] | 4 |
| Biol 372[M] or NATRS 300 [B] | 4-3 |
| AFS 301** | 3 |
| CRS 336 [S] | 3 |
| Seminar (discipline optional) | 1 |
| AFS 401** | 3 |
| **Total AFS Core** | **35-36** |

| **Plant and Soil Systems Core** | |
|---|---|
| CropS/Hort 202**** | 4 |
| ES/RP 174 | 3 |
| Biol 320 | 4 |
| Pest Mgt (CropS 305, Entom 340 PlPath 429 or (other) | 3 |
| Plant Systems (CropS 403 or SoilS 345 or 445 | 3 |
| SoilS 441 | 3 |
| Hort/Crop/SoilS Internship | 3 |
| **Total Plant & Soil Core Req.** | **23** |

**Option 1 - Cropping Systems**

| | |
|---|---|
| Production Course (CropS 302 or Hort 320 or other plant production) | 3 |
| Additional Pest Management (CropS 305 or Entom 340 or PlPath 429 or other pest management) | 3 |
| CropS 411 | 3 |
| CropS 444 and 445 [M] | 4 |
| SoilS 301 [M] | 3 |
| SoilS 442 | 3 |
| AgEc 340, 3XX or 4XX or SoilS 468 | 3-4 |
| **Total Cropping Systems** | **22-23** |

**Total Credits 123-126**

**Option 2 - Soils Management**

| | |
|---|---|
| Production Course (CropS 302 or Hort 320 or other plant production) | 3 |
| SoilS 301 [M] | 3 |
| SoilS 431 | 3 |
| SoilS 451[M] | 3 |

| | |
|---|---|
| SoilS 442 | 3 |
| SoilS 374 or 474 or 468 | 3-4 |
| Ag Elective Upper Division | 3 |
| **Total SoilS Mgt** | **21-22** |
| | **Total Credits 122-125** |

**Option 3 - Horticulture Systems**

| | |
|---|---|
| Chem 345 (or other organic chemistry) | 4 |
| Hort 251 or 334 or Hort 251**** (credits in Hort electives) | 0 |
| Hort 418 [M] or Hort 425 [M] (credits in Hort electives) | 0 |
| Hort Lower/Upper Division (Excluding Hort 399, 356, 499) | 8 |
| Hort Upper Division | 5 |
| Electives | 1-3 |
| **Total Horticulture** | **18-20** |
| | **Total Credits 120-123** |

*Course listed in AFS Core
** New AFS Courses
*** Course waived with satisfactory math placement exam or CC transfer credit
****Major Core Courses required for Hort Minor
Minimum of 120 credits required for graduation

**Proposed New Courses [These four courses are in draft format and will be further developed and refined as the program is approved]**

**Agricultural and Food Systems (AFS) 101-Introduction to Systems, 3 cr. 2, 2.**
Introduction to the disciplines and integration of fields of agriculture, food production, manufacturing and distribution and rural society to define and solve real-world problems.

Prerequisites-none

Text-assigned readings

## Objectives and Student Learning Outcomes

Upon successful completion of this course students will be able to:

1. Discuss the definition and components of an integrated agricultural system
2. Identify the reasons for using an integrated agricultural systems approach
3. Use examples of integrated agricultural systems approach in other fields
4. Use hard systems inquiry
5. Use soft systems inquiry
6. Apply the scientific method in developing and analyzing integrated agricultural systems
7. Identify the properties of a system are different than the properties of the components
8. Interpret the connections between specific disciplinary knowledge and the system as a whole
9. Discuss the importance of integration of disciplines in problem-solving, the global food supply and individual careers.

## Course Description

The course will introduce the students to the basic components of agriculture and food production and distribution systems. They will learn terminology, workings of the various elements of food production (plant and animal), manufacturing, distribution and rural society. Laboratories will focus on teamwork, problem solving, using discipline specific knowledge, integrating disciplines to solve more complex problems. Students will learn separately and also learn to work together as teams. Real-world examples and effective problem solving approaches will be used. Students will be introduced to and work with computer tools such as spreadsheets and simple databases, and will be guided to make effective use of internet search engines and simple applications. Students will be provided ample opportunity to learn how to find discipline specific knowledge and how to work with others to integrate knowledge into systems to solve practical problems.

**General Outline**

| | |
|---|---|
| Week 1. | Introduction and History of Systems-What and Why? |
| Week 2. | Simple tools for research and application |
| Week 3. | Disciplines in agriculture, soils, crops, mechanization |
| Week 4. | Disciplines in agriculture, grain crops (cropping systems) |
| Week 5. | Disciplines in agriculture, forage crops |
| Week 6. | Disciplines in agriculture, fruits and vegetables |
| Week 7 | Disciplines in agriculture, ruminant animals, non-ruminant |
| Week 8. | Farming Systems-development and integration |
| Week 9. | Food Production Systems-economic, manufacturing systems |
| Week 10. | Rural Systems-connectedness to society |
| Week 11. | Systems tools and research, revisited |
| Week 12. | Scientific methodology in systems development and research |
| Week 13. | Hard Systems Inquiry |
| Week 14. | Soft Systems Inquiry |
| Week 15. | Integrating Disciplines and endeavors into systems |

**Laboratory Outline**

The laboratory activities will closely follow the lectures. They will be minds-on, hands-on activities designed around identifying key elements of food production systems, gathering important information through a variety of methodologies, and working alone and with others to identify and solve problems. Methodologies such as spreadsheets, databases, programs such as PowerPoint will be used. Effective use of internet search engines and simple modeling software will be learned. A strict application of the scientific method to systems and model component development will be emphasized.

| | |
|---|---|
| Week 1. | Need for and development of systems approaches and systems |
| Week 2. | Identifying systems components, problem solving |
| Week 3. | Disciplines in agriculture, soils, crops, mechanization |
| Week 4. | Disciplines in agriculture, grain crops (cropping systems) |
| Week 5. | Disciplines in agriculture, forage crops |

| | |
|---|---|
| Week 6. | Disciplines in agriculture, fruits and vegetables |
| Week 7. | Disciplines in agriculture, ruminant animals, non-ruminant |
| Week 8. | Disciplines in agriculture, pests and pesticides |
| Week 9. | Farming Systems-development and integration |
| Week 10. | Rural Systems-connectedness to society |
| Week 11. | Food Production Systems-economic, manufacturing systems |
| Week 12. | Scientific methodology in systems development and research |
| Week 13. | Inquiry based development of hard systems |
| Week 14. | Inquiry based development of soft systems |
| Week 15. | Identifying and solving problems with systems approaches |

**Evaluation and Grading**

Student participation will be a large element of this class. Attendance will be monitored. Students will have a variety of smaller (overnight or two days) assignments and a few larger, but level-appropriate problems solving studies. Students must demonstrate understanding of terminology and methodologies for components of food production and integration into systems.

| | |
|---|---|
| Laboratory Preparation and Assignments | 200 |
| Class and Laboratory Participation | 200 |
| Exams | 300 |
| In Class Assignments | 100 |
| | 800 |

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**Students with disabilities**

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## Agricultural and Food Systems (AFS) 201-Introductory Systems Development , 3 cr, 2, 2

Development of tools and skills in building, evaluating and applying model systems in agricultural production, food manufacturing and distribution, rural society and society as a whole. Focus is on the types of systems, construction and analysis.

Prerequisites: AFS 101, Math 107 or STAT 212, Chem 101 or 105; Biol 102 or 106
Text: Assigned Readings

## Objectives and Student Learning Outcomes

Upon successful completion of this course students will be able to:

1. Identify basic tools for integrated systems development
2. Interpret basic tools for integrated systems analysis
3. Diagram initial development and evaluation of integrated agricultural system
4. Apply the scientific method in developing and analyzing an integrated agricultural system
5. Discuss basic concepts of integrated agricultural system thinking
6. Describe how to address real-world food, agricultural and natural resource situations using integrated agricultural systems-based methodologies
7. Categorize different types of dynamic systems integrating physical, biological and human components
8. Distinguish between reductionistic and integrative approaches to investigation and application of knowledge
9. Integrate components into whole integrated agricultural system analysis
10. Evaluate the effect of change within integrated agricultural system on expected outcomes

## Course Description

The course will develop further training and tools skills in systems and modeling. In-depth definitions and examples of inquiry, data-gathering, model construction, systems integration, model and systems evaluation will be covered and practiced. Students will construct models of basic systems as teams, and show how they apply in real-world situations. Assignments will include learning to choose what types of systems to use, how to gather or learn information necessary to the situation, team-based integration, construction and evaluation (measuring against real-world) of models and systems. Emphasis will be placed on presentation techniques including computer programs and oral presentation skills.

**General Outline**

| | |
|---|---|
| Week 1. | Introduction, review from 101, purpose of course |
| Week 2. | Integrative Problem Solving |
| Week 3. | Inquiry methodology |
| Week 4. | Basic Science Inquiry, applied science & technology |
| Week 5. | Systems thinking: Key concepts |
| Week 6. | Hard Systems Inquiry |
| Week 7. | Soft Systems Inquiry |
| Week 8. | Modeling: purposes and types |
| Week 9. | Modeling: language and analysis |
| Week 10. | Practice in Soft Systems Inquiry |
| Week 11. | Developing Models in Food, Agricultural and Natural Resource situations |
| Week 12. | Comparing Models with reality, evaluation |
| Week 13. | Implementing Change Models |
| Week 14. | Practical Application Projects (case studies?) |
| Week 15. | Practical Application Projects |

**Laboratory Outline.**

The lab will follow the topics in lecture. Students will be expected to learn and apply the scientific method in all aspects of inquiry, research, problem identification and solution. Emphasis will be on teamwork, using expertise from specific disciplines with the goal of integrated solutions. Collection of field data, data recording techniques and integrating information from different fields (system components) will be practiced. A deeper understanding of computer programs such as spreadsheets, databases, expert systems, and model software will be demonstrated.

Week 1. Introduction, review from 101, purpose of course

| | |
|---|---|
| Week 2. | Integrative Problem Solving |
| Week 3. | Inquiry methodology |
| Week 4. | Basic Science Inquiry, applied science & technology |
| Week 5. | Systems thinking: Key concepts |
| Week 6. | Hard Systems Inquiry |
| Week 7. | Soft Systems Inquiry |
| Week 8. | Modeling: purposes and types |
| Week 9. | Modeling: language and analysis |
| Week 10. | Practice in Soft Systems Inquiry |
| Week 11. | Developing Models in Food, Agricultural and Natural Resource situations |
| Week 12. | Comparing Models with reality, evaluation |
| Week 13. | Implementing Change Models |
| Week 14. | Practical Application Projects (case studies?) |
| Week 15. | Practical Application Projects |

**Evaluation and Grading**

The learning will be student-centered, and constant meaningful participation will be expected. Students will learn data collection and recording techniques. Participation in group problem solving will be emphasized. Problem identification, research, general analysis, interpretation, integration and determining solutions will be practiced, followed by presentation of the same.

| | |
|---|---|
| Laboratory Preparation and Assignments | 300 |
| Class and Laboratory Participation | 200 |
| Exams | 200 |
| In Class Assignments | 100 |
| | 800 |

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**Students with disabilities**

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## Agricultural and Food Systems (AFS) 301- Systems Development and Analysis, 3 cr. 2, 2

Prerequisites: AFS 201, Stat 212 or 412; junior standing
Text: Assigned Readings

## Objectives and Student Learning Outcomes

Upon successful completion of this course students will be able to:

1. Analyze an existing integrated agricultural system from various levels of organizational structure
2. Design an integrated agricultural system from various levels of organizational structure
3. Construct with others one or more simple or integrated agricultural system plans
4. Apply reductionistic and integrative approaches to investigation and application of knowledge
5. Analyze experiences with integrating agricultural components into whole systems

## Course Description

The course will build on the skills obtained in AFS 101 and 201, as well as several discipline-specific classes in chemistry, biology and economics. Students will be expected to learn more specific methodologies of systems description and analysis including modeling software, case study analysis, advanced databases, expert systems and statistics. Group problem identification and solving will be a major emphasis. Problem identification, gathering of data from a variety of methodologies (databases, bibliography searches, experiments); integration of components into systems and applications to real world problems.

**General Outline**

| | |
|---|---|
| Week 1. | Introduction, Purpose, Brief review from 101 and 201 |
| Week 2. | Advanced modeling and systems analysis |
| Week 3. | Systems and models of minor complexity at one level of organization-plants and soils |
| Week 4. | Systems and models of minor complexity at one level of organization-plants and soils |
| Week 5. | Systems and models of minor complexity at one level of organization-animals |
| Week 6. | Systems and models of minor complexity at a few levels of organization-farms, ecosystems, society |
| Week 7. | Systems and models of moderate complexity at more levels of organization-farms |
| Week 8. | Systems and models of organization-food production systems |
| Week 9. | Systems and models of moderate complexity at more levels of organization-agricultural enterprises, society, ecology |
| Week 10. | Systems and models of moderate complexity at more levels of organization-ag enterprises, society ecology |
| Week 11. | Complex model systems, many organization levels within and across disciplines |
| Week 12. | Complex model systems, many organization levels within and across disciplines |
| Week 13. | Student Projects |
| Week 14. | Student Projects |
| Week 15. | Student Projects |

**Laboratory Schedule**

The laboratories will stress specific skills, tools and methodologies to develop, construct, evaluate and improve systems relating to all aspects of agriculture and food production. Students will practice advanced techniques in problem identification, gathering of needed information, design of experiments to gather unavailable data, integration of information into systems descriptions. Analysis and evaluation of systems (measured against real-world data). Case Study analysis. Group problem identification and solving. Presentation of systems and results.

| | |
|---|---|
| Week 1. | Introduction, Purpose, Brief review from 101 and 201 |
| Week 2. | Advanced modeling and systems analysis |
| Week 3. | Systems and models of minor complexity at one level of organization-plants and soils |
| Week 4. | Systems and models of minor complexity at one level of organization-plants and soils |
| Week 5. | Systems and models of minor complexity at one level of organization-animals |
| Week 6. | Systems and models of minor complexity at a few levels of organization-farms, ecosystems, society |
| Week 7. | Systems and models of moderate complexity at more levels of organization-farms |
| Week 8. | Systems and models of organization-food production systems |

| | |
|---|---|
| Week 9. | Systems and models of moderate complexity at more levels of organization-agricultural enterprises, society, ecology |
| Week 10. | Systems and models of moderate complexity at more levels of organization-ag enterprises, society ecology |
| Week 11. | Complex model systems, many organization levels within and across disciplines |
| Week 12. | Complex model systems, many organization levels within and across disciplines |
| Week 13. | Student Projects |
| Week 14. | Student Projects |
| Week 15. | Student Projects |

**Evaluation and Grading**

Emphasis will be on student-centered learning. Students will be expected to apply knowledge from other classes and that developed within this class to solve problems. This is a writing in the major class, and most of the grade for the class will be directly and indirectly related to written skills. Reports and descriptions must be of professional quality.

| | |
|---|---|
| Laboratory Preparation and Assignments | 300 |
| Class Participation | 100 |
| Exams | 200 |
| In Class Assignments | 100 |
| | 800 |

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**Students with disabilities**

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## Agricultural and Food Systems (AFS) 401-Advanced Systems Analysis and Design, 3 cr. 2, 2

Prerequisites: AFS 301, Stat 212 or 412; English 402 encouraged; senior standing

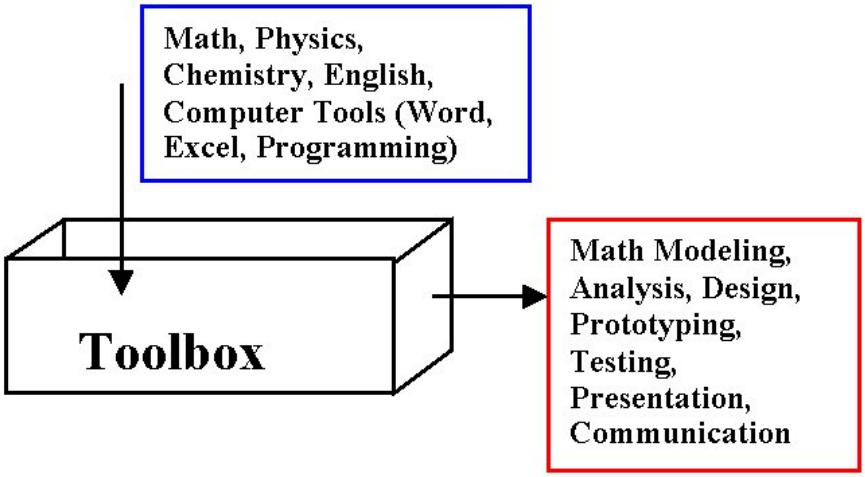
### Objectives and Student Learning Outcomes

Upon successful completion of this course students will be able to:

1. Compose an organized methodology in problem solving integrated agricultural system analysis
2. Appraise the unique aspects of the integrated agricultural system its significance to society, and career opportunities in this field
3. Perform as a team member or leader in the pursuit of creative solutions to applied integrated agricultural systems problems
4. Practice information-based technologies to develop integrated agricultural system approach in agricultural production.
5. Assess remote sensing and other spatial technologies to develop an integrated agricultural systems management plan
6. Conduct integrated agricultural system research to assess utilization of precision agriculture techniques
7. Assemble precision agriculture technologies into an integrated agricultural system for an agricultural application

### Course Description

Students will build on previous knowledge to identify and solve complex systems problems. The Toolbox is a metaphor for the collection of knowledge and skills you'll be or have gathered during your education. You're now in the most intense period of that education, but remember, your education will never stop completely. Among the "tools" you'll be putting into the toolbox in your first few years are such things as calculus, physics, chemistry, differential equations, communications, etc. During this class, we'll be learning some additional tools, and focusing on techniques for using these tools. Later, when faced with an Integrated Agricultural Systems Management challenge, you'll turn to your metaphorical toolbox to get started on a solution.




The main focus will be on problem-solving methodologies, as applied to integrated agricultural systems analysis and design problems. A strong emphasis will be placed on teamwork and team problem solving activities in Integrated Agricultural Systems projects.

**General Outline**

Week 1. Introduction, Purpose, Brief review from 101, 201 and 301

Week 2. Advanced modeling and integrated agricultural systems analysis
Week 3. Logical modeling for database integrated agricultural system design
Week 4. "
Week 5. Physical modeling for database integrated agricultural system design
Week 6. "
Week 7. GPS / GIS for integrated agricultural system applications
Week 8. Use of computer assisted models in animal production
Week 9. Use of computer assisted models in animal production
Week 10. Use of computer assisted models in plant production
Week 11. Use of expert system software to integrate knowledge
Week 12. Student Projects
Week 13. Student Projects
Week 14. Student Projects
Week 15. Student Projects

**Laboratory Outline**

Laboratories will be guided inquiry-based problem identification and solving, using contemporary technologies of data collection, analysis and systems integration. In addition, group problem solving will be the norm. Students will integrate concepts from statistics with specific procedures already supported by diverse technologies. For example, develop knowledge base to relate yield maps and remotely sensed images of fields and farms to the preferred habitat of major insects or pests. Develop novel experimental designs to evaluate impacts of management decisions. Develop an expert system that manages spatial and other thematic information used in precision agriculture. Design computer software interfaces that empower producers and consultants to design, collect, and analyze spatially registered inputs and outputs obtained during production cycles. Develop data collection, delivery, analysis, and storage software and hardware for the entire network of information captured and used in integrated agricultural precision systems. Animal, plant, integrated plant/animal; food distribution and rural infrastructure and society systems will be used.

Week 1. Introduction, Purpose, Brief review from 101, 201 and 301
Week 2. Advanced modeling and integrated agricultural systems analysis
Week 3. Logical modeling for database integrated agricultural system design
Week 4. "
Week 5. Physical modeling for database integrated agricultural system design
Week 6. "
Week 7. GPS / GIS for integrated agricultural system applications
Week 8. Use of computer assisted models in animal production
Week 9. Use of computer assisted models in animal production
Week 10. Use of computer assisted models in plant production
Week 11. Use of expert system software to integrate knowledge
Week 12. Student Projects
Week 13. Student Projects
Week 14. Student Projects
Week 15. Student Projects

**GRADING**

The grades for this course will be computed as follows.

| | | |
|---|---|---|
| Team Design Assignments/Projects<br>(approx. 2 written projects and several written small assignments) | | **70%** |
| *Team Score;*<br>including reports, design, etc. (same score for all team members) | 35% | |
| *Individual Score;*<br>including work logs and individual portions of projects. | 25% | |
| *Participation Score;*<br>(see description below*) | 10% | |
| Quizzes | | **5%** |
| Homework Assignments | | **25%** |

| | |
|---|---|
| TOTAL: | **100%** |

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**Students with disabilities**

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## Section VI. Uses of Technology

1. Computer programs, GPS systems, GIS software, biotechnology techniques, video conferencing, modeling technologies and techniques, sensors and various data collection technologies, and various new systems technologies as they become available in the industry.

2. The latest computer models/methods will be used to educate graduates in making informed decisions about business/economic issues; forecasting; simulation of field/animal/crop yields and management; appraisals; new product development; environmental and conservation practices; etc.

3. Current programs within CAHNRS may use some of these technologies in a specified discipline area. There will be the need to expand and share the technologies to the new program area. Programs will need to be updated as technologies change.

4. Agricultural and Food Systems program lends itself to conventional and unconventional, classroom delivery, laboratory delivery, where lectures and laboratories are blended with real-time exchange of ideas and discussions. In general, several modes of technology-based delivery are anticipated. There may be exceptions to this statement depending on the course and/or specific topic. Multimedia lectures and laboratories will be common in the program and dependent on individual teaching styles/preferences of each faculty.

5. The use of current technologies will enhance our students' understanding and ability to apply them in the real world.

## Section VII. Delivery methods

1. The Agricultural and Food Systems program will be primarily based on the Pullman campus as a face-to-face program. However, there may be the opportunity to link via technology to industry or educational institutions outside the area, region, or nation.

2. WECN, Internet, WHETS, group video conferences, and various electronic communication tools.

3. The faculty will be able to bring experts into the classroom and/or laboratory using a number of technologies.

4. Various methods of instructional delivery will be used to delivery the Agricultural and Food Systems degree. Hands-on instructional laboratories will play a major part in several of the courses while lecture, discussion, debates, role-playing, and other models of teaching will be applied.

## Section VIII. Students

**A. How many students to you expect to serve with this program?**

| Number of Students | Year 1 | Year 2 | Year 3 | Year 2010 |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| **Headcount** | 104 | 115 | 130 | 140 |
| **FTE** | 104 | 115 | 130 | 140 |

**B. Admission Requirements**

1. Admission into the programs will follow university guidelines and policies.

2. Students in the Agricultural Education major will also be required to meet certification requirements for the College of Education both at entry and at exit. Students in this major will meet Washington Office of the Superintendent of Public Instruction Certification standards upon successful completion of the major.

**C. Expected time for Program Completion**

1. Most, if not all, students will be full-time Pullman based students. Some may attend part-time.

2. All majors and options should be able to be completed with a 4-year period of time, for full-time students. Part-time students will vary depending on how much they are required to work to support going to school. The only exception to this might be the Agricultural Education curriculum. This is because of the number of courses required for certification and or licensure.

3. Each of the undergraduate majors and options has a 4-year planned program designed and ready to implement. See attachments for these planned programs.

4. Transfer students should not be negatively impacted by the program. Articulation programs with various community colleges may need to be modified. These articulation agreements will be updated upon approval of the program. In most cases there will be minor changes to existing agreements. Our desire is make this a seamless change that will benefit students regardless of where they started their educational career.

**D. Advising**

1. Each major and option already have faculty academic advisors in place and actively involved with designing this program. They will provide student advising in the new Agricultural and Food Systems Degree.

2. Advisors are assigned by their area of expertise and area of interest. This may also include assigning advisors by area in which they teach and do research.

**E. Diversity**

1. The Agricultural and Food Systems degree program and its majors will follow the university guidelines for recruiting and retaining all students regardless of color, disability, or gender.

2. The College of Agricultural, Human, and Natural Resource Sciences recruitment plan is stated as related to the proposed Agricultural and Food Systems degree within a land grant university.

3. Especially in the rural areas and smaller cities, CAHNRS will be putting forth additional efforts to recruit Hispanic, as well as other minorities, into this proposed degree program. CAHNRS will have our recruiter work closely with these communities; and some recent WSU graduates who will be of assistance in recruiting are members of these communities.

4. As the nation's rural base has decreased over the years, agricultural programs across the nation have seen a decline in the traditional agriculture students. CAHNRS has shifted to also focusing recruiting activities on students from cities and suburbs. To build interest, CAHNS will showcase through world class research and CAHNRS Academic majors that Agricultural and Food Systems can provide great job opportunities for students from non-farm backgrounds. We will also inform urban students that AFS classes are transitioning from production to science based classes and provide the knowledge and understanding how the entire system works from production through consumption. We plan to use the methods listed below to inform urban students of the many opportunities available to them in Agricultural and Food Systems:
    - CAHNRS Grabbers (mail to all high school counselors, agricultural and science teachers, community college transfer centers)
    - CAHNRS Marketing CD (mail to all high school counselors, agriculture, and science teachers, community colleges)
    - High School Science (Washington Science Teachers Association and Washington Association of Agricultural Educators and National FFA Convention 50,000 students attend this conference).
    - CAHNRS Ambassador (Visit high schools in western and eastern Washington to talk about the new degree program).
    - County Extension Offices (mail all marketing items to all extension offices).
    - 4-H Clubs (mail all marketing items to all 4-H clubs)
    - Radio advertisements
    - State FFA Conference with 2300 students, teachers, and parents

## Section IX. Faculty and Administrative Support

| Faculty Name (or "New" if not yet hired) | Rank | Status (part, full, regular, adjunct) | % Effort in Program |
|---|---|---|---|
| Michael Swan | Professor | Full | 100 |
| Marvin Kleene | Associate Professor | Full | 100 |
| James Durfey | Senior Instructor | Full | 100 |
| Carter Clary | Assistant Professor | Full | 60 |
| John McNamara | Professor/Scientist | Full | 5 |
| Cathy Perillo | Instructor | 9 month | 25 |
| Charles Gaskins | Professor | Full | 10 |
| Gary Piper | Associate Professor | Full | 50 |
| Kathleen Willemsen | Associate Professor | 9 month | 10 |
| Ray Jussaume | Professor | Full | 20 |
| Alan McCurdy | Professor | Full | 5 |

| | |
|---|---|
| **Total FTE Faculty in Program** | **4.975** |

| Name (or "New" if not yet hired) | Title | Responsibilities | % Effort in Program |
|---|---|---|---|
| Director/Coordinator – Cathy Perillo | Program Coordinator | Administration | 50 |
| Linda Bentley | Classified Staff Program Coord. | Support | 17.5 |
| **Total Staff FTE in Program** | | | **0.675** |

## Section X. Facilities

1. The Agricultural and Food Systems program will not require additional teaching laboratories. All except four of the core courses already exist on the Pullman campus.

2. The four new courses (AFS 101, 201, 301, 401) may require teaching and instructional laboratory space. These spaces already exist but would need to be scheduled for use by these courses during the terms they are offered.

3. All research facilities exist and are being used currently.

## Section XII. External Reviews

**Date:** February 14, 2006

**To:** Provost Bates

**From:** Leon Schumacher

**RE:** B.S. in Agricultural and Food Systems

A quality degree program in Agricultural and Food Systems is the goal of the revision that you have proposed. However, a review of the individual curriculum options within the degree is difficult having only course titles (in some situations simply course numbers). I then explored the Washington State University website, in hopes of learning more about some of these courses. Although beneficial, questions remained so I then called and spoke with one of the reviewers, Phil Buriak. His observation was that the degree programs at Washington State University were about to be consolidated under a systems umbrella with options/emphasis areas for students to pursue. This approach is indeed very flexible for students and could in fact become "the" model for other Universities as they develop curriculum that best meets the needs of their students.

The systems approach when teaching topics in agriculture is a very good way to provide information for students. I for one was taken aback when in my final year of my BS degree (and in an advanced soil fertility class) I suddenly discovered why I had taken Chemistry as a freshman. I feel the systems approach does a much better job of helping students understand these types of relationships, is more in line with how we learn from day-to-day activities, and has greater potential for permanent learning.

There are some drawbacks to this approach, but I feel these can be addressed. For example, employers may or may not know whom they should affiliate with after their "emphasis area" is dissolved into the new degree program. For example, to what department should Agricultural Systems Technology questions be directed? With the good marketing program, however, questions of this nature will quickly dissipate for constituents in the State of Washington.

I am equally concerned about the impact this might have for new faculty hired to teach under the new umbrella. However, the development of a graduate program for this new degree would allow faculty the flexibility they need to work with graduates students, conduct research, partner with their peers and win support for related research.

In short, I see real possibilities with the proposed curriculum revision. Good luck as you move ahead with the new program.

Sincerely,

Leon Schumacher
Professor and Chair, Agricultural Systems Management
207 Agricultural Engineering Building
University of Missouri
Columbia, MO 65211

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Department of Agricultural and Biological Engineering

College of Agricultural, Consumer and Environmental Sciences and College of Engineering
338 Agricultural Engineering Sciences Building
1304 W. Pennsylvania Avenue
Urbana, IL 61801

**Date:** 30 November 2005

**To:** Provost Bates

**From:** Philip Buriak

**RE:** B.S. in Agricultural and Food Systems

The goals, objectives, and student learning outcomes set standards for a quality program in Agricultural and Food Systems. Review of the individual curriculum options within the degree is difficult having only course titles. However, my assumption is that the degree programs are to be consolidated under a systems umbrella with the options maintaining some degree of integrity with the programs they are replacing.

Systems science/systems methods is a good and appropriate umbrella…all original programs comprise the system. It works. Technical Systems Management at the University of Illinois (the program I coordinate) follows the same philosophy and would be analogous to a hybrid option of your proposed options #1 and #3. Our students have been quite successful in obtaining excellent careers in management, marketing and application of technologies across a broadened agricultural and industrial spectrum. I believe your proposed systems curriculum can be equally successful.

A potential concern/weakness is the perceived lack of specificity in the degree title by some external to the college or university. Agricultural and Food Systems may be somewhat nebulus to potential employers looking for an agronomist. This same concern actually works to the advantage for my students in TSM, an equally nebulus name. Now my students can package themselves any way they choose which has broadened their career choices both within agriculture and outside of agriculture.

I see no real downside to your proposed curriculum revision.

## Section XIII. Library Capacity

**1. Adequacy of existing capacity:**

The existing library collections and equipment are adequate for the proposed program. As this area of study expands and more textbooks and journals are available, there could be a few additional acquisitions requested. Existing personnel and services are adequate. As new serials/journals become available in this field of inquiry, Academic Programs of CAHNRS will partner with WSU libraries to secure the needed publications.

2. **Need for new library collections:**

As professional journals and textbooks are developed for this field of inquiry, there will be a need for some limited additions to the library collections. As time passes, and if a graduate degree/research area(s) is developed in this area then the need to add to the library collection will be much greater. At this time there is no need to expand the serials, monographs, or media capacity or holdings of the library.

**3. New library personnel needed:**

No new specialized expertise or staff or faculty will be required for the proposed program.

**4. Additional library services needed:**

At this time there will not be a need for additional library services given the interdisciplinary nature or combining of areas from existing fields.

## Section XIV. Demand and Cost

**Strengths:**

The departments and faculty in this proposed interdisciplinary degree are Biological Systems Engineering, Horticulture and Landscape Architecture, Crop and Soil Sciences, Community and Rural Sociology, Entomology, Food Science and Human Nutrition and Animal Sciences all excel at undergraduate teaching and advising. It is this devotion to the undergraduate learning experience at WSU that has distinguished this group of faculty. It is the willingness of the faculty from these departments to develop such an interdisciplinary degree and learning experience for undergraduate students that sets this program apart from our competitors.

**Weaknesses:**

The least effective activity of the faculty who will be involved with this undergraduate program is their limited scholarly activity in terms of peer reviewed articles in Tier I journals.

**Opportunities:**

Coupled with the needs assessment that indicated that a non-disciplinary or an interdisciplinary degree is desirable, the proposed degree offers both efficiency and meeting the needs of future employers of WSU students. The best way to take advantage of this opportunity is to form a college wide degree that is administered at the college level.

**Threats:**

The most uncontrollable factors that could influence the success of this program are possible future budget cuts and the resulting loss of faculty and teaching resources. The worst outcome would be that key courses (AFS 101, 201, 301, and 401) would not be offered and the students would leave the program. This threat will continue as long as the state's economy remains in an unstable economic

position. This threat can be minimized by producing the best graduates possible and building statewide support for the program.

**COMPETITIVE ANALYSIS:**

**Competitor 1 Utah State University**

**Agricultural Systems Technology and Education -- ASTE**

"Agricultural Systems Technology (AST) prepares individuals to manage businesses with the application of sound technical, economical, and environmental practices. Leading-edge technology is applied to real-world problems, with the emphasis on being productive. Each program within the baccalaureate degree emphasizes technical information, applied research, and a systems approach to solving problems."

"Problem solving practices rely on a basic strategy that includes problem identification, collection of information, and evaluating solutions to achieve a goal. The AST program tackles these concepts in a formal manner, using computer software, information technology, and mathematics. The AST major provides real-world instruction with resources that afford the greatest balance between leading-edge technology and its full, productive use."

Degrees offered by ASTE:

Bachelor of Science (BS)

- Mechanization Option
- Business Option

Master of Science (MS)

- Agricultural Mechanization Specialization
- International Agricultural Extension Specialization
- Agricultural Extension Education Specialization
- Secondary and Postsecondary Agricultural Education Specialization

**Competitor 2 The Ohio State University**

**Industrial and Systems Engineering -- ISE**

"Industrial and Systems Engineering provides the perfect blend of technical skills and people orientation. An industrial engineer addresses the overall system performance and productivity, responsiveness to customer needs, and the quality of the products or services produced by an enterprise. They also are the specialists who ensure that people can safely perform their required tasks in the workplace environment."

Undergraduate degree (Bachelor of Science) and Graduate degree (Master of Science and Doctor of Philosophy) programs are offered by both ISE academic unit.

Industrial and Systems Engineering (ISE) is concerned with the integration of information, humans, machines, and materials into successful and efficient systems

**Competitor 3 Iowa State University**

**The Agricultural System Technology -- AST**

"Agricultural system technologists manage agricultural and biologic systems. They identify, formulate, and solve problems related to many of the same areas as an agricultural engineer would, but always with an eye

towards managing the processes in context of the entire system."

**The Ag Systems Technology Program**
"The Agricultural Systems Technology (AST) program is tailored for individuals seeking a challenging agricultural career by applying their knowledge of technology, agricultural production and processing systems. This exciting hands-on curriculum in the College of Agriculture teaches students to manage machines and equipment, biological processes, computers and other technologies to create new and improved agricultural systems for the future."

**DEMAND ANALYSIS:**

**Demand**

Most of the students are located within the State of Washington. However, some students will be attracted on a regional basis since similar educational experiences (degrees) do not exist elsewhere in the Pacific Northwest.

**Market size**

Since this degree does not exist in the Pacific Northwest, there are not any students in this field. The potential number of students to be certified majors is 150.

**Market share**

The estimated market share for the proposed Agricultural and Food Systems Degree is 1% of the total WSU enrollment of 21,000. This market share could increase as more efficiencies or consolidations of existing programs continues.

**Market capacity**

The market capacity of the proposed degree will be constrained by the market demand for its graduates. At this time the market capacity is estimated at 300, given current enrollments in CAHNRS at WSU and the current placement rate of students.

**Growth**

The growth rate is estimated at 16% compounded annually over the time period of 2006 to 2010. Since the proposed degree is new to the Pacific Northwest, the high growth rate is justified.

**Current academic or industry demand for graduates of the proposed program**

We are currently placing all graduates from the programs that are being combined into the proposed degree and, with the inclusion of other fields or options such as organic agriculture, we anticipate a growing or increasing demand for the graduates of the proposed degree.

**Barriers to competitive entry into this market**

The major barriers that will inhibit other institutions from entering this market are budget constraints in the form of not having the qualified faculty needed that will teach such an interdisciplinary undergraduate program.

**Market Segmentation**

Most undergraduate students in CAHNRS programs are the typical 18-23 year olds with over 90% coming from Washington. Most of the students choose WSU because it is the land grant institution

within Washington that offers agriculturally related programs. Students that choose to go elsewhere usually do it for personal reasons such as relationships with other students at those institutions or financial reasons including scholarship offers.

**Target Market**

The target market for the proposed degree will be the typical high school/community college graduates who want a professional career in/or surrounding food/agricultural production and the entire system that moves such products with their embedded services through to the final consumers. These graduates need to understand the entire system so that if a single decision is made somewhere within the system that it might or will have ramifications at other places with the overall system. This understanding of an entire system approach will be the focus of the interdisciplinary Agricultural and Food Systems degree. A secondary market will be industry employees who want to upgrade their qualifications.

**RECRUITMENT PLAN**

1. **How students are going to find out about this program:**
   Student will learn about this program through:
   a. CAHNRS Grabbers (Mail to all High Schools counselors, agricultural and science teachers, Community College Transfer Centers)
   b. CAHNRS Marketing CD (Mail to all High Schools counselors, agriculture, and science teachers, Community College)
   c. High School Science (Washington Science Teachers Association and Washington Association of Agricultural Educators and National FFA Convention 50,000 students attend this conference)
   d. CAHNRS Ambassador (Visit HS in Western & Eastern Washington to talk about the new degree program)
   e. County Extension Offices (mail all marketing items to all extension offices)
   f. 4-H Clubs (mail all marketing items to all 4-Clubs)
   g. Radio Ads
   h. State FFA Convention

2. **How professionals will be informed in order to assist in promoting by word-of-mouth:**
   CAHNRS will inform professionals who by providing them with marketing materials (CAHNRS Grabbers and CAHNRS marketing CD), detailed outline of the new degree program, and/or personal visits from CAHNRS recruiter or CAHNRS administration to explain the new degree program.

3. **Entities that will be helpful in promotion activities:**
   a. Washington Association of Agricultural Educators
   b. Washington Science Teachers Association
   c. Washington State Extension
   d. Washington State 4-Clubs
   e. Washington State Commodities groups
   f. CAHNRS Ambassadors

   CAHNRS will access these groups through direct dialog and written correspondence with each group. We will also provide each group with marketing materials to be placed in visible locations in their offices.

## Section XV. Financial Analysis

**Table 4 Summary of Program Costs**

| **Enter the name of the Degree program here** | Date | Internal Reallocation | New State Funds | Other Sources | Year 1 Total | Year N Total |
|---|---|---|---|---|---|---|
| Administrative Salaries, including benefits | | 19,506 | - | - | 19,506 | 19,506 |
| Faculty Salaries, including benefits | | 338,247 | - | - | 338,247 | 338,247 |
| TA/RA Salaries including benefits | | n/a | - | - | n/a | n/a |
| Clerical Salaries, including benefits | | 8,864 | - | - | 8,864 | 8,864 |
| Other Salaries including benefits | | - | - | - | - | - |
| Contract Services | | - | - | - | - | - |
| Goods and Services | | 12,000 | - | - | 12,000 | 12,000 |
| Travel | | 2,000 | - | - | 2,000 | 2,000 |
| Equipment | | - | - | - | - | - |
| Other costs | | - | - | - | - | - |
| Library | | - | - | - | - | - |
| **Direct Cost** | | **380,617** | **-** | **-** | **380,617** | **380,617** |
| **Indirect Cost** | | **223,537** | **-** | **-** | **223,537** | **223,537** |
| **Total Cost** | | **604,154** | **-** | **-** | **604,154** | **604,154** |
| FTE Students* | | | | | 55 | 70 |
| **Cost Per FTE** | | | | | **$10,985** | **$8,631** |

*Based on CAHNRS
Courses Required

**Table 5 Salary Cost Detail - Year 1**

| Name | Monthly salary | # of months | Annual Salary | Buyout Pgm % | Annual Pgm salary |
|---|---|---|---|---|---|
| **Administration:** | | | | | |
| Program Director (50% appointment) | $2,866 | 6.00 | $34,386 | 100.00 | $17,193 |
| Benefits (26.9%) | $771 | 6.00 | $4,626 | 100.00 | $2,313 |
| Subtotal Administration | $3,637 | 6.00 | $39,012 | 100.00 | $19,506 |
| **Faculty:** | | | | | |
| 10 Faculty w/ 4.975 FTE committed to AFS Program | $25,241 | 27.65 | $698,016 | 43.40 | $302,886 |
| Benefits 26.9% | $6,790 | 27.65 | $81,478 | | $35,361 |
| Subtotal Faculty | $32,031 | 27.65 | $779,494 | 43.40 | $338,247 |
| **TA/RA's:** | | | | | |
| None | | | | | |
| Subtotal TA/RA | 0 | | 0 | | 0 |
| **Clerical staff:** | $2,841 | 2.40 | $34,092 | 20.00 | $6,818 |
| Benefits | $852 | 2.40 | $10,228 | 20.00 | $2,046 |
| Subtotal Clerical | $3,693 | 2.40 | $44,320 | 20.00 | $8,864 |
| **Total** | $39,361 | | $862,826 | | $366,617 |

**Table 5 Salary Cost Detail - Year N - Full Enrollment**

| Name | Monthly salary | # of months | Annual Salary | Buyout Pgm % | Annual Pgm salary |
|---|---|---|---|---|---|
| **Administration:** | | | | | |
| Director | $2,866 | 6.00 | $34,386 | 100.0 | $17,193 |
| Benefits | $771 | 6.00 | $4,426 | 100.0 | $2,313 |
| Subtotal Administration | $3,637 | 6.00 | $39,012 | 100.0 | $19,506 |
| **Faculty:** | | | | | |
| 10 Faculty w/ 4.975 FTE | $25,241 | 27.65 | $698,016 | 43.4 | $302,886 |
| Benefits | $6,790 | 27.65 | $81,478 | | $35,361 |
| Subtotal Faculty | $32,031 | 27.65 | $779,494 | 43.4 | $338,247 |
| **TA/RA's:** | | | | | |
| None | | | | | |
| Subtotal TA/RA | 0 | | 0 | | 0 |
| **Clerical staff:** | $2,841 | 2.40 | $34,092 | 20.00 | $6,818 |
| Benefits | $852 | 2.40 | $10,228 | 20.00 | $2,046 |
| Subtotal Clerical | $3,693 | 2.40 | $44,320 | 20.00 | $8,864 |
| **Total** | $39,361 | | $862,826 | | $366,617 |

**Rev. 10/20/05**

# APPENDIX I - Four Year Schedule of Studies

**B.S. in Agricultural and Food Systems**
**Agricultural Business and Technology Systems - Agri-Food Business Management**

**First Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 101 | 3 |
| Chem 101 [P] | 4 |
| Econ 101 [S] | 3 |
| Gen Ed 110 or 111 [A] | 3 |
| Math 201 | 3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Acctg 230 | 3 |
| Biol 102 [B] | 4 |
| Chem 102 [P] | 4 |
| Engl 101 [W] | 3 |
| Gen Ed 110 or 111 [A] | 3 |

**Second Year**

| ***First Term*** | ***Hours*** |
|---|---|
| A S 101 | 3 |
| AFS 201 | 3 |
| Ag Ec 340 | 3 |
| Arts/Humanities Elective [H][D] | 3 |
| Biol 120 [B] | 4 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Ag Ec 3XX | 3 |
| CropS/Hort 102 | 3 |
| HD205 [C] or ComSt 102 [C] | 3 |
| H,G,S,K Elective | 3 |
| SoilS 201 [B] | 3 |

**Third Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 301 | 3 |
| Acctg 231 | 3 |
| Ag Ec 350 | 3 |
| Engl 402 [M,W] | 3 |
| Stat 212 or Math 140 or 171 or 202 [N] | 4 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Ag Ec 4XX | 3 |
| Electives | 9 |
| Fin 325 | 3 |

**Fourth Year**

| *First Term* | *Hours* |
|---|---|
| AFS 401 | 3 |
| Ag Ec 360 | 3 |
| Biol 372 [M] or NATRS 300 [B] | 4-3 |
| CropS 360 [I] | 3 |

| *Second Term* | *Hours* |
|---|---|
| Capstone (Tier III) [T] | 3 |
| CRS 336 [S] | 3 |
| Electives | 6 |
| Seminar | 1 |

**B.S. in Agricultural and Food Systems**
**Agricultural Business and Technology Systems - Agri-Food Production Management**

**First Year**

| *First Term* | *Hours* |
|---|---|
| AFS 101 | 3 |
| Chem 101 [P] | 4 |
| Econ 101 [S] | 3 |
| Gen Ed 110 or 111 [A] | 3 |
| Math 201 | 3 |

| *Second Term* | *Hours* |
|---|---|
| Biol 102 [B] | 4 |
| Chem 102 [P] | 4 |
| Elective | 3 |
| Engl 101 [W] | 3 |
| Gen Ed 111 [A] | 3 |

**Second Year**

| *First Term* | *Hours* |
|---|---|
| A S 101 | 3 |
| AFS 201 | 3 |
| Ag Ec 320 [S, M] | 3 |
| Arts & Humanities Elective [H][D] | 3 |
| Biol 120 [B] | 4 |

| *Second Term* | *Hours* |
|---|---|
| ComST 102 [C] or HD205 [C] | 3 |
| CropS/Hort 102 | 3 |
| CropS 360 [I] | 3 |
| NATRS 312 [S, D] | 3 |

| | |
|---|---|
| SoilS 201 [B] | 3 |

**Third Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 301 | 3 |
| AgTM 305 | 3 |
| Electives | 3 |
| Hort/CropS 202 | 4 |
| Stat 212 or Math 140 or 171 or 202 [N] | 4 |

| ***Second Term*** | ***Hours*** |
|---|---|
| AgTM 315 | 3 |
| AgTM 436/437 | 4 |
| Elective [H,D, S, K] | 3 |
| Electives | 3 |
| Hort/CropS 3XX | 3 |

**Fourth Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 401 | 3 |
| Biol 372[M]or NATRS 300 [B] | 4-3 |
| Electives | 5 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Capstone (Tier III) [T] | 3 |
| CRS 336 [S] | 3 |
| Electives | 6 |
| Seminar | 1 |

**B.S. in Agricultural and Food Systems**
**Agricultural Business and Technology Systems - Communications**

**First Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 101 | 3 |
| A S 101 | 3 |
| Chem 101 [P] | 4 |
| ComSt 102 [C] or HD 205 [C] | 3 |
| Engl 101 [W] | 3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Arts & Humanities [H,D] | 3 |
| Chem 102 [P] | 4 |
| Engl 201 [W] | 3 |
| GenEd 110 or 111 [A] | 3 |
| Math 107 or 201 | 4-3 |

**Second Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 201 | 3 |
| Biol 106 [B] | 4 |
| Com 245 | 3 |
| Econ 101 [S] | 3 |
| Stat 212 [N] | 4 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Biol 107 or Biol 120 [B] | 4 |
| Com 295 | 3 |
| GenEd 110 or 111 [A] | 3 |
| Psych 105 [S] | 3 |
| SoilS 201 [B] | 3 |

**Third Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 301 | 3 |
| CropS/Hort 102 | 3 |
| Elective | 3 |
| Option Course (1) | 3 |
| Complete Writing Portfolio | |

| ***Second Term*** | ***Hours*** |
|---|---|
| 300/400 Ag Elective (Ag Ec 350) | 3 |
| 300/400 Ag Elective | 3 |
| Option Courses (3) | 9 |

**Fourth Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 401 | 3 |
| CropS 360 [I] | 3 |
| NATRS 300 [B] | 3 |
| Options Course (1) | 3 |
| Seminar Ag 300/400 | 1 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Capstone (Tier III) [T] [D] | 3 |
| CRS 336 [S] | 3 |
| Options Courses (3) | 9 |

**B.S. in Agricultural and Food Systems**
**Agricultural Business and Technology Systems – Technology**

**First Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 101 | 3 |
| Chem 101 [P] | 4 |
| Econ 101 [S] | 3 |
| GenEd 110 or 111 [A] | 3 |
| Math 201 | 3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| A S 101 | 3 |
| Biol 102 [B] | 4 |
| Chem 102 [P] | 4 |
| Engl 101 [W] | 3 |
| GenEd 110 or 111 [A] | 3 |

**Second Year**

| ***First Term*** | ***Hours*** |
|---|---|
| Acctg 230 | 3 |
| AFS 201 | 3 |
| AgTM 305 | 3 |
| AgTM 314 | 3 |
| Biol 120 [B] | 4 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Biol 372 [M] or NATRS 300 [B] | 4/3 |
| ComSt 102[C] or HD 205 [C] | 3 |
| CropS/Hort 102 | 3 |
| SoilS 201 [B] | 3 |
| Stat 212 or Math 140 or 171 or 202 [N] | 4 |

**Third Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 301 | 3 |
| AgTM 330 | 3 |
| CRS 336 [S] | 3 |
| Elective [H,G, S, K] | 3 |
| MgtOp 301 | 3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| AgTM 315 | 3 |
| AgTM 412 | 3 |
| Ag Ec 440 [M] | 3 |
| Elective | 3 |
| Arts & Humanities [H, D] | 6 |

**Fourth Year**

| *First Term* | *Hours* |
|---|---|
| AFS 401 | 3 |
| AgTM 451(Seminar) | 1 |
| MKTG 360 | 3 |
| CropS 360 [I] | 3 |
| Electives | 3 |

| *Second Term* | *Hours* |
|---|---|
| AgTM 416 | 3 |
| AgTM 405 | 2 |
| Capstone (Tier III) [T] | 3 |
| Engl 402 [W, M] | 3 |
| Electives | 3 |

**B.S. in Agricultural and Food Systems**

**Agricultural Education**

**First Year**

| *First Term* | *Hours* |
|---|---|
| ComSt 102[C] or HD 205 [C] | 3 |
| AFS 101 | 3 |
| A S 101 | 3 |
| Chem 101 [P] | 4 |
| Engl 101 [C] or Psych 105 [S] | 3 |

| *Second Term* | *Hours* |
|---|---|
| Chem 102 [P] | 4 |
| Stat 212/Math Prof [N] | 4 |
| GenEd 110 or 111 [A] | 3 |
| AgTM 201 | 3 |
| Engl 101 [C] or Psych 105 [S] | 3 |
| T&L 300 | 1 |

**Second Year**

| *First Term* | *Hours* |
|---|---|
| Econ 101 [S] | 3 |
| Biol 106 [B] | 4 |
| AFS 201 | 3 |
| Engl 201 [W] | 3 |
| SoilS 201 [B] | 3 |
| T&L 301 | 2 |

| *Second Term* | *Hours* |
|---|---|
| CropS/Hort 102 | 3 |
| GenEd 110 or 111 [A] | 3 |
| Biol 107 [B] | 4 |
| Hum Elective [H] [D] | 3 |
| Math 107 or 201*** | 3/4 |

**Third Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AgEd 471 | 2 |
| Ag Econ 340 or 350 | 3 |
| Hort Elective Upper Division | 3 |
| AFS 301 | 3 |
| T&L 302 & 303 & 317 | 6 |
| ***Second Term*** | ***Hours*** |
| CropS 360 [I] | 3 |
| T&L 404 | 2 |
| T&L 328 [M] | 2 |
| CRS 336 [S] | 3 |
| NATRS 300 [B] | 3 |
| Capstone (Tier III) [T] | 3 |
| T&L 445 | 2 |

**Fourth Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AgEd 440 [M] | 2-3 |
| AgEd 342 | 3 |
| EdPsy 402 | 2 |
| T&L 478 | 2 |
| T&L 400 | 2 |
| Ag Elective | 3 |
| AFS 401 | 3 |
| ***Second Term*** | ***Hours*** |
| AgTM 402 | 3 (Pre Req being changed to AgTM 201) |
| AgED 442 | 2 |
| AgEd 407 | 6 |
| T&L 415 | 6 |

**B.S. in Agricultural and Food Systems**
**Organic Agriculture Systems**
**First Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 101 | 3 |
| Eng 101 [W] | 3 |
| GenEd 110 or 111 [A] | 3 |
| Chem 101 or 105 [P] | 4 |
| ***Second Term*** | ***Hours*** |
| SoilS 101 | 3 |
| GenEd 110 or 111 [A] | 3 |
| Chem 102 or 106 [P] | 4 |
| FSHN 130 [B] | 3 |

**Second Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 201 | 3 |
| Biol 106 [B] | 4 |
| Econ 101 [S] | 3 |
| Math 107 or 201 | 4-3 |
| A S 101 | 3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Biol 107 [B] or Biol 120 [B] | 4 |
| ComST 102[C] or HD 205 [C] | 3 |
| CropS/Hort 102 | 3 |
| Stat 212, or Mth 140, 171 Or 202 [N] | 4 |

**Third Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 301 | 3 |
| Biol 372[M] or NATRS 300 [B] | 4-3 |
| Phil 260[H] | 3 |
| SoilS 201 [B] | 3 |
| Ag Elective | 3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| CropS 360 [I] | 3 |
| CRS 336 [S] | 3 |
| CropS 305, Entom 340, or PlP 429 | 3 |
| Ag Elective | 6 |

**Fourth Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 401 | 3 |
| Internship (discipline optional) | 3 |
| Psych 105 [S] | 3 |
| SoilS 345, 404, or 445 | 3 |
| Ag Elective Upper Division | 6 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Capstone (Tier III) [T] | 3 |
| SoilS 480 | 6 |
| AgElective Upper Division | 6 |
| Seminar (discipline optional) | 1 |

**B.S. in Agricultural and Food Systems**
**Pest Management Systems**

**First Year**

| ***First Term*** | ***Hours*** |
|---|---|
| A S 101 | 3 |
| Biol 106 [B] | 4 |
| Chem 101 or 105 [P] | 4 |
| AFS 101 | 3 |
| Math 107 or 201 | 4-3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| GenEd 110 or 111 [A] | 3 |
| Biol 107 or 120 [B] | 4 |
| Chem 102 or 106 [P] | 4 |
| Engl 101 [W] | 3 |

**Second Year**

| ***First Term*** | ***Hours*** |
|---|---|
| Econ 101 [S] | 3 |
| ComSt 102[C] or HD 205 [C] | 3 |
| CropS/Hort 102 | 3 |
| ES/RP 174 | 3 |
| AFS 201 | 3 |
| IPM 201 | 2 |

| ***Second Term*** | ***Hours*** |
|---|---|
| GenEd 110 or 111 [A] | 3 |
| Arts & Humanities [H,D] | 3 |
| CRS 336 [S] | 3 |
| SoilS 201 [B] | 3 |
| Elective | 3 |

**Third Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 301 | 3 |
| Biol 320 | 4 |
| CropS 305 | 3 |
| CropS 360 [I] | 3 |
| Pl P 429 | 3 |
| Complete Writing Portfolio | |

| ***Second Term*** | ***Hours*** |
|---|---|
| Biol 332 | 4 |
| Biol 372[M] or NATRS 300 [B] | 4/3 |
| Entom 340 or Entom 343[M],344 [M] | 3-5 |
| IPM 452 | 2 |
| Elective | 3 |

***Year 3 Summer Session***

| | |
|---|---|
| IPM 399 | 3 |

**Fourth Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 401 | 3 |
| Seminar | 1 |
| Stat 212 [N] | 4 |
| Capstone (Tier III) [T,D] | 3 |
| Electives | 2-4 |

| ***Second Term*** | ***Hours*** |
|---|---|
| IPM 462 [M] | 3 |
| Psych 105 [S] | 3 |
| Electives | 3 |

**B.S. in Agricultural and Food Systems**

**Plant and Soil Systems – Cropping Systems**

**First Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 101 | 3 |
| CropS/Hort 102 | 3 |
| Chem 101 or 105 [P] | 4 |
| Math 107 or 201 | 4/3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Biol 106 [B] | 4 |
| Chem 102 or 106 [P] | 4 |
| Engl 101 [W] | 3 |
| ComST 102[C] or HD 205 [C] | 3 |
| GenEd 110 or 111 [A] | 3 |

**Second Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 201 | 3 |
| A S 101 | 3 |
| GenED 110 or 111 [A] | 3 |
| Biol 107 or 120 [B] | 4 |
| SoilS 201 [B] | 3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| CropS 360 [I] | 3 |
| CropS/Hort 202 | 4 |
| Econ 101 [S] | 3 |
| Phil 260 [H] | 3 |
| Psych 105 [H,G,S,K] | 3 |

**Third Year**

| *First Term* | *Hours* |
|---|---|
| AFS 301 | 3 |
| CropS 305 or other pest mgt. | 3 |
| Biol 372[M] or NATRS 300 [B] | 4/3 |
| ES/RP 174 | 3 |
| SoilS 301[M] | 3 |

| *Second Term* | *Hours* |
|---|---|
| CRS 336 [S] | 3 |
| CropS 403, or SoilS 345 or 445 | 3 |
| SoilS 441 | 3 |
| Pest Management Elective | 3 |
| Stat 212 [N] | 4 |

**Fourth Year**

| *First Term* | *Hours* |
|---|---|
| AFS 401 | 3 |
| Biol 320 | 4 |
| CropS 498 Internship | 3 |
| CropS 302 or Hort 320 or other Plant production | 3 |
| SoilS 442 | 3 |

| *Second Term* | *Hours* |
|---|---|
| Capstone (Tier III) [T,D] | 3 |
| CropS 412 (Seminar) | 1 |
| Ag Ec 340, 3XX or 4XX or SoilS 468 | 3-4 |
| CropS 411[M] | 3 |
| CropS 444 and 445 [M] | 4 |

**B.S. in Agricultural and Food Systems**
**Plant and Soil Systems – SoilS Management**
**First Year**

| *First Term* | *Hours* |
|---|---|
| AFS 101 | 3 |
| CropS/Hort 102 | 3 |
| Chem 101 or 105 [P] | 4 |
| Math 107 or 201 | 4-3 |
| Psych 105 [H,G,S,K] | 3 |

| *Second Term* | *Hours* |
|---|---|
| Biol 106 [B] | 4 |
| Chem 102 or 106 [P] | 4 |
| Engl 101 [W] | 3 |
| ComST 102[C] or HD 205 [C] | 3 |
| GenEd 110 or 111 [A] | 3 |

**Second Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 201 | 3 |
| A S 101 | 3 |
| GenEd 110 or 111 [A] | 3 |
| Biol 107 or 120 [B] | 4 |
| SoilS 201 [B] | 3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Econ 101 [S] | 3 |
| CropS/Hort 202 | 4 |
| CropS 360 [I] | 3 |
| Stat 212 [N] | 4 |
| Phil 260 [H] | 3 |

**Third Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 301 | 3 |
| Biol 372[M]or NATRS 300 [B] | 4/3 |
| ES/RP 174 | 3 |
| SoilS 301 [M] | 3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| CRS 336 [S] | 3 |
| CropS 403, SoilS 345 or 445 | 3 |
| SoilS 441 | 3 |
| AgTM upper division | 3 |
| SoilS 374, or 474 or 468 | 3-4 |

**Fourth Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 401 | 3 |
| Biol 320 | 4 |
| SoilS 431 | 3 |
| SoilS 442 | 3 |
| SoilS 451 [M] | 3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Capstone (Tier III) [T] | 3 |
| SoilS 412 Seminar | 1 |
| CropS 305 or Entom 340 or PlP 429 | 3 |
| SoilS 498 Internship | 3 |
| Production Course Elective (CropS 302 or Hort 320 or other) | 3 |

**B.S. in Agricultural and Food Systems**

**Plant and Soil Systems – Horticulture Systems**

**First Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 101 | 3 |
| CropS/Hort 102 | 3 |
| Chem 101 or 105 [P] | 4 |
| Math 107 or 201 | 4/3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Biol 106 [B] | 4 |
| Chem 102 or 106 [P] | 4 |
| Engl 101 [W] | 3 |
| ComST 102[C] or HD 205 [C] | 3 |
| GenEd 110 or 111 [A] | 3 |

**Second Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 201 | 3 |
| A S 101 | 3 |
| GenED 110 or 111 [A] | 3 |
| Biol 120 [B] | 4 |
| SoilS 201 [B] | 3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Hort/CropS 202 | 4 |
| Econ 101 [S] | 3 |
| Phil 260 [H] | 3 |
| Chem 345 | 4 |
| Hort Minor Elective | 3 |

**Third Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 301 | 3 |
| CropS 305 | 3 |
| Biol 372[M] or NATRS 300 [B] | 4/3 |
| ES/RP 174 | 3 |
| Biol 320 | 4 |

| ***Second Term*** | ***Hours*** |
|---|---|
| CRS 336 [S] | 3 |
| Hort Minor Elective | 3 |
| SoilS 441 | 3 |
| Stat 212 [N] | 4 |

**Fourth Year**

| ***First Term*** | ***Hours*** |
|---|---|
| AFS 401 | 3 |
| CropS 360 [I] | 3 |
| Hort Minor Elective | 3 |
| Plant Systems (CropS 403, SoilS 345, SoilS 445 or other) | 3 |
| Hort 399 (Internship) | 3 |

| ***Second Term*** | ***Hours*** |
|---|---|
| Arts & Humanities [H,G] or Social Sciences [S, K] | 3 |
| Capstone (Tier III) [T] | 3 |
| Seminar | 1 |
| Hort Minor Electives | 4-8 |
| Electives | 1-3 |

# Appendix II

# Endorsement of Chief Academic Officer

**From:** Robert C. Bates [bates@wsu.edu]
**Sent:** Thursday, November 10, 2005 9:40 PM
**To:** Jane Sherman
**Cc:** grimes@wsu.edu; mccracke@wsu.edu; jameslg@wsu.edu
**Subject:** Re: BS Agricultural and Food Systems

Jane,

Thanks for the summary and additional comments. You may proceed to send it to the Faculty Senate for their review and action.

Thanks,Bob

<<AFS Degree Proposal - final.doc>>

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